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EXAMINER	
PONNALURI, PADMASHRI	

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/882,144	NIELSEN ET AL.	
	Examiner	Art Unit	
	Padmashri Ponnaluri	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/2/04; 11/19/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,15,17-19 and 21* is/are pending in the application.

4a) Of the above claim(s) *10,15,17-19 and 21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9, 11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/24/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The supplemental response to the election restriction filed on 3/2/04 has been fully considered and entered into the application. Applicant's election of 'fungal' as the organism filed on 3/2/04 has been fully considered.

2. Applicant's election with traverse of group I, claims 1-7; and species election of a) 'enzyme' as secreted product; b) 'fungal' as donor/host organism (response filed 3/2/04); c) 'polyclonal' as antibodies; d) enzyme screening assay; e) 'carbohydrase' as enzyme; f) ' assay for thermal stability' as functional assay; g) 'thermal stability' as desired function, in Paper filed on 11/19/03 is acknowledged.

The traversal is on the ground(s) that groups I, II, claim 11 of group III and group V should be examined together. Examiner has found that group II and claim 11 of group III was inadvertently grouped separately from group I. Upon further consideration the restriction between group I and group II has been withdrawn and claims 8-9 and claim 11 will be examined together with the elected group I.

Applicant's arguments regarding group V are not persuasive, since group V inventions are drawn to a patentably distinct method. Group V method is drawn to 'method for screening for a nucleotide sequence encoding compound secreted by an organism. Even though the method steps of group V overlap with the group I method steps, the group V method has further method steps, and the end product of group I and group V are not the same. Thus, for the reasons set forth in the previous office action the group V methods are restricted from group I method.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 10, 15, 17-19, 21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper filed on 11/19/03.

4. Claims 12-14, 16 and 20 have been canceled by the amendment filed on 11/19/03. Claims 1-9 and 11 are currently being examined in this application.

Priority

5. This application claims priority to Denmark application PA 2000 00963, filed on 6/21/00; and provisional application 60/213,376, filed on 6/23/00.

6. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

7. The information disclosure statement filed on 7/24/01 has been fully considered and entered into the application.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

9. Claims 1-9, 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the cloned genes" in step d). There is insufficient antecedent basis for this limitation in the claim or in claim 1.

Claim 5 recites the limitation "the supernatant obtained from cultivating positive clones". There is insufficient antecedent basis for this limitation in the claim or in claim 1.

Claim 7 recites the limitation "the donor strain". There is insufficient antecedent basis for this limitation in the claim or in claim 1.

Claim 11 recites the limitation "wherein the preparation of a gene library of step (b)". There is insufficient antecedent basis for this limitation in the claim or in claim 1.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the instant claimed method is drawn to 'screening for compounds secreted by an organism'; however the last/end step recites ' detecting the positive clones expressing the gene encoding a secreted compound', thus the claimed method would result in identifying the clones, not the compounds as the claimed method is designed for. Applicants are requested to amend the claim to include the method step 'to identify the compounds.'

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Abdur Rehman et al (Molecular and Biochemical Parasitology, 97 (1998) 55-68).

The instant claims briefly recite a method for screening for compounds secreted by an organism comprising: a) raising antibodies against secreted products of donor organism; b) providing a gene library from the donor organism; c) cloning the gene library into a suitable host organism; d) expressing the cloned genes in the host organism; and e) detecting the positive clones expressing a cloned gene encoding a secreted compounds using the antibodies of step (a) to identify such positive clones.

Rehman et al teach methods for isolation of secreted protein genes from the gut of the parasitic nematode (refers to the organism or the donor organism of the instant claims). The reference teaches that polyclonal antisera (refers to instant claim step a)) made against the secreted proteins were used to screen expression cDNA libraries made either from adult worm gut or whole worm (refers to the step b), 'gene library from the donor organism' of the instant claims) (i.e., see the abstract). The reference teaches that the genes identified encode secreted proteins from the gut, including cysteine protease, a zinc metallopeptidase (refers to the 'enzyme' of the instant claims) (i.e., see the abstract). The reference teaches methods for raising antibodies to H.contortus antigens (i.e., see page 56, right column). The reference teaches methods for constructing cDNA libraries from either the whole gut of adult female H. contortus or whole worms. The reference teaches that the cDNA was cloned into λ Zap II vector (refers to instant claim step c), and the λ vectors refers to the host organism). Thus, the antibodies raised for antigens of same organism as the source of the cDNA. The reference H.contortus refers to the donor organism of the instant claims. The reference teaches methods for immunoscreening

the cDNA library using the antibodies to the proteins, and positive clones plaques (refers to the positive clones of the instant claims) were purified by four successive rounds of screening (refers to the instant claims 4) (i.e., see page 57). The reference teaches that 36 clones were identified from the H.contortus gut cDNA library that was identified by the antisera to the antigens. The reference teaches that the encoded gut proteins are likely to be involved in nutrient digestion (refers to the desired functionality). The reference clearly anticipates the claimed method.

12. Claims 1-9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,665,585 (TORKKELI et al).

The instant claims briefly recite a method for screening for compounds secreted by an organism comprising: a) raising antibodies against secreted products of donor organism; b) providing a gene library from the donor organism; c) cloning the gene library into a suitable host organism; d) expressing the cloned genes in the host organism; and e) detecting the positive clones expressing a cloned gene encoding a secreted compounds using the antibodies of step (a) to identify such positive clones.

Torkkeli et al teach recombinant production of glucoamylase P in trichoderma. The reference teaches the use of filamentous fungi for the expression of H.resinae glucoamylase P (GAMP) cDNA and genomic DNA. The reference teaches trichoderma was chosen as the recombinant host for the expression of GAMP, because compared to Aspergillus, T.resei secretes larger amounts of β-glucans, and hmicellulose decomposing enzyme activities. The reference teaches that cloning of genetic sequences that are capable of encoding GAMP (i.e., see column 9). The reference teaches that methods for site directed mutagenesis of the glucoamylase P to alter the thermal stability The reference teaches that for cloning into a vector, the desired DNA

(either genomic or cDNA may be randomly ligated into the vector to form a recombinant gene library (i.e., see column 10). The reference teaches that the libraries containing the sequences coding GAMP is screened and a sequence coding for GAMP is identified by screening with antibodies to the proteins (i.e., see column 12). The reference teaches that polyclonal antibodies against purified H.resinae GAMP were raised in rabbits (i.e., see column 20). Thus the antibodies raised for the secreted proteins of H.resinae and the source of the library was H.resinae, which refers to the donor organism of the instant claims. The reference teaches that the E.coli strain was used as host and λgt11 phage as the vector for the cDNA library of the reference method (i.e., see column 20). The reference teaches that the cDNA library was screened with polyclonal antiglucoamylase antibodies , and three peptide clones were found (i.e., see column 22). The reference teaches that the positive clones were subcloned and analyzed for the structure of the GAMP. The reference teaches methods for determination of specific activity (i.e., see column 31). The reference teaches that the specific activity of A.niger glucoamylase is higher than that of glucoamylase P when the substrate is changed (i.e., see table 5). The reference clearly anticipates the claimed invention.

13. Claims 1-,2 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,171,674 (STEVENS et al).

The instant claims briefly recite a method for screening for compounds secreted by an organism comprising: a) raising antibodies against secreted products of donor organism; b) providing a gene library from the donor organism; c) cloning the gene library into a suitable host organism; d) expressing the cloned genes in the host organism; and e) detecting the positive

clones expressing a cloned gene encoding a secreted compounds using the antibodies of step (a) to identify such positive clones.

Stevens et al teach identification, characterization and sequencing of cDNAs and genomic fragments which encode a secretary granule proteoglycan peptide core protein (refers to the secretary compound of the instant claims) that is present in promyelocytic leukemia cell line (i.e., see columns 3-4). The reference teaches recombinant sequences encoding human secretary granule proteolycan peptide core protein, and expression vectors containing such genetic sequences, hosts transformed with such expression vectors. The reference teaches antibodies which specifically recognize human secretary granule proteoglycan peptide core protein (i.e., see column 4).

The reference teaches that the sequences of secretary granule proteoglycan peptide core protein or its functional derivatives are cloned into appropriate vectors to form a recombinant gene (either genomic or cDNA) library (refers to the gene library of the instant claims) (i.e., see column 8). The reference teaches that the expression vectors with the recombinant secretary granule proteoglycan peptide core protein are introduced into host cell, either prokaryotic or eukaryotic to produce recombinant human secretary granule proteoglycan peptide core protein or a functional derivative thereof. The library of expression vectors is screened for members, which express human secretary granule proteoglycan peptide core protein, by screening the library with antibodies to the protein (refers to instant claimed method) (i.e., see column 11). Thus the reference clearly anticipates the claimed invention.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 1-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,165,718 (Borchert et al) and either US Patent 5665585 (Torkkeli et al) or Rehman et al (Molecular and Biochemical Parasitology, 97 (1998) 55-68).

The instant claims briefly recite a method for screening for compounds secreted by an organism comprising: a) raising antibodies against secreted products of donor organism; b) providing a gene library from the donor organism; c) cloning the gene library into a suitable host organism; d) expressing the cloned genes in the host organism; and e) detecting the positive clones expressing a cloned gene encoding a secreted compounds using the antibodies of step (a) to identify such positive clones.

Borchert et al teach methods for in vivo production of a mutant library in cells, and

screening of the mutants and selection of those exhibiting desire properties. The reference teaches screening of the library or the selection of the variants depends on the specific polypeptide and which properties thereof are desired to improve or retain. The reference teaches the polypeptide of interest is alkaline phosphatase (refers to the secretary compound of the instant claims) and screening is performed to investigate properties such as thermal stability, oxidation stability, storage stability, substrate specificity, and affinity stability to non-aqueous solvents, pH profile, ionic strength dependence, catalytic efficiency, and wash performance (refers to the desired functionality of the instant claims) (i.e., see column 3). The reference teaches that the mutant library means a set of cells bacteria, or phages that differ with respect to one particular gene encoding polypeptide of interest (refers to the host cells of the instant claims) (i.e., see column 6). The reference teaches that the genetic element is a phage, wherein the gene encoding the polypeptide upon expression is displayed from the surface of the phage. The reference teaches phagemid based system which are transformed into E.coli (refers to the host cell). The reference teaches the polypeptide of interest is an enzyme, specifically 'carbohydrases' (refers to the secretary compound of the instant claims) (e.g., see column 8, 10). The reference discloses a list of carbohydrases and the source organisms (I.e., see column 10). The reference teaches that the mutant library is cultivated in such conditions conductive for expression of said genes of interest to produce variant polypeptide, and the variant polypeptides are screened or selected for a desired property and hosts producing desired variants identified and isolated.

The claimed invention differs from the prior art teachings by reciting raising antibodies to the secretary compound and use the antibodies to the secretary compound to screen the library. Borchert et al teach mutant library comprising polypeptides encoding secretary enzymes,

specifically carbohydrases, and methods of expressing the enzymes in expression vectors, and methods for transforming host cells with the vectors and methods of screening the library. The reference has not specifically taught the use of antibodies specific for the enzyme in the method of screening a library.

Torkkeli et al and Rehman et al have been discussed supra. Either Torkkeli et al or Rehman et teach methods of making genetic libraries of the secretary compounds in vectors and methods of screening the library with antibodies specific to the secretary compound of interest. Thus, it would have been obvious to one skilled in the art at the time the invention was made to use the antibodies specific for the secretary compounds in the method of screening a library of the secretary compounds taught by Borchert et al. A person skilled in the art would have been motivated to use the mutant library taught by Borchert et al and screen the library for the variant compounds (or recombinant compounds) with the expectation of identifying modified and/or improved desired function of the compounds.

Conclusion

17. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Padmashri Ponnaluri whose telephone number is 571-272-0809. The examiner is on Increased Flex Schedule and can normally be reached on Monday through Friday between 7 AM and 3.30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Padmashri Ponnaluri
Primary Examiner
Art Unit 1639

Pp
12 May 2004

PADMASHRI PONNALURI
PRIMARY EXAMINER